Apparatus and method for Low Pressure CVD Deposition of Tungsten and Tungsten Nitride

ABSTRACT OF THE DISCLOSURE

[38] In accordance with an embodiment of the invention, a processing chamber is configured to carry out chemical vapor deposition (CVD). An ampoule vaporizer is fastened to the chamber, and is configured to convert a fluorine-free tungsten-containing solid compound to vapor delivered to the chamber for use in the CVD. In one embodiment, the solid compound is tungsten hexacarbonyl (W(CO)6). In another embodiment, a mass flow controller is fastened to the chamber, and is configured to receive the vapor from the ampoule vaporizer, regulate the flow of the vapor, and deliver the vapor to the chamber. In yet another embodiment, the chamber includes a funnel-shaped dispersion plate configured to receive a gas mixture and direct the gas mixture toward a surface of the wafer in a substantially uniform manner.